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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,059	10/04/2005	Alexander Padiy	FR 030037	6182
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/552,059

**Applicant(s)**

PADIY ET AL.

**Examiner**

CHIBUIKE K. NWAKAMMA

**Art Unit**

4178

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/309)
- Paper No(s)/Mail Date 06/19/2007.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the label names on Figs. 1-6 as described in the specification, i.e., Fig. 1, element 6-1 should be labeled as "Apparatus", Fig. 1, element 8 should be labeled as "Optical Unit", Fig. 1, elements 11 and 13 should be labeled as "Satellite Reading Element", Fig. 1, element 12 should be labeled as "Main Reading Element", Fig. 1, elements 21 and 23 should be labeled as "Satellite Light Spots", Fig. 1, element 22 should be labeled as "Main Light Spot", Fig. 1, element 40 should be labeled as "Signal Processor", Fig. 1, element 42 should be labeled as "Cross-Talk Cancelling Means", Fig. 1, element 44 should be labeled as "Decoding Means", Fig. 1, element 46 should be labeled as "Reproduction Circuit", Fig. 1, element 50-1 should be labeled as "Time Recovery Circuit".

Note: The correction should be applied to all Figures. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figs. 1 and 2, element 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

3. The disclosure is objected to because of the following informalities:

- Page 7, line 10; the phrase "is connected In the path".
- Page 7, line 14; the phrase "and is connected In".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyanabe et al (US 2002/0034268 A1).

Claim 1, A cross-talk cancellation method using a main signal (Page 4, Paragraph 0063) associated with a target track (see Figs. 2 and 18, element MT) and satellite signals, i.e.,  $S_{\text{sub1}}$  and  $S_{\text{sub2}}$ , (see Fig. 2) associated with side tracks (see Figs. 2 and 18, elements ST2 and ST2), said main signal showing transitions (see Fig. 8; The first signal has transitions at  $-3T$  and 0 ( $S_{zc}$ )) and runs of various lengths (see Fig. 8; The first signal shows runs of various length, i.e., from  $-3T$  to 0 and  $-2.6T$  to  $T$ ). Also, Page 4, Paragraph 0073 discloses plural kinds of lengths) between two transitions (Fig. 8; Two transitions at  $(-3T, 0)$ ) said cancellation method comprising the steps of:

filtering said satellite signals with adaptive filters (Fig. 2, elements F1 and F3; Page 4, Paragraph 0073. High pass filters are disclosed that filter satellite signals, i.e.,  $S_{\text{sub}1}$  and  $S_{\text{sub}2}$ , therefore, the HPF are equated as adaptive filters), thereby generating filtered versions (see Fig. 2; Filtered versions of the signals are  $S_{\text{sub}1}'$  and  $S_{\text{sub}2}'$ ) of said satellite signals,

updating the coefficients (Fig. 9, elements 55-60; Page 9, Paragraph 0158-Page 10, Paragraph 0169. The filtered coefficient calculating unit is equated as a means of updating the coefficients via calculation. The calculating unit operates based on error value. Therefore, errors are minimized each time a calculation process is performed) of said adaptive filters by minimizing the mismatch between the actual, i.e., (Fig. 8;  $-3T$ , 0 is equated as actual run), and the expected, (Fig. 8;  $-2.6$ ,  $T$  is equated as expected run), run length between two transitions (Fig. 8; Transitions at  $-3T$ , 0), of the main signal (Fig. 2; see signal  $S_{\text{main}}$ ), and

processing said main signal, thereby generating an improved main signal (Fig. 2, element 6 discloses a processing unit which processes the main signal, i.e.,  $S_{\text{main}}$ , thereby, generating an improved main signal, i.e.,  $S_{\text{dd}}$  in Fig. 3),

said processing including a subtraction of said filtered versions of said satellite signals, i.e.,  $S_{\text{db}1}$  and  $S_{\text{db}2}$ , (Page 11, Paragraph 0197; Fig. 11, element 76 is a subtracter).

Claim 2, A program, i.e., cross-talk removing processing program, comprising instructions for implementing a cross-talk cancellation method as claimed in claim 1

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when said program is executed by a processor (Page 5, Paragraph 0087-Page 6, Paragraph 0106; Fig. 3, element 6 is a signal processing unit which comprises of various circuitry that perform specific instructions/processes for implementing a cross-talk cancellation method. Therefore, the operation of all the different elements to obtain the removing signal, SP, is equated as a program, i.e., cross-talk removing processing program).

Claim 3, A signal processor (Fig. 3, element 6) comprising cross-talk cancellation means (Fig. 3, element 22. see Fig. 9, element 22 for a more detailed showing of the cross-talk cancelling circuit) for receiving a main signal, i.e., S<sub>dm</sub>, associated with a target track (see Figs. 2 and 18, element MT) and satellite signals, (Fig. 2; see signals S<sub>sub1</sub> and S<sub>sub2</sub>) associated with side tracks (see Figs. 2 and 18, elements ST2 and ST2), said main signal showing transitions (see Fig. 8; The first signal has transitions at -3T and 0 (S<sub>zc</sub>)) and runs of various lengths (see Fig. 8; The first signal shows runs of various length, i.e., from -3T to 0 and -2.6T to T. Also, Page 4, Paragraph 0073 discloses plural kinds of lengths) between two transitions (Fig. 8; Transitions at -3T, 0), said cross-talk cancellation means comprising:

filtering means (Fig. 2, elements F1 and F3; Page 4, Paragraph 0073. High pass filters are disclosed that filter satellite signals, i.e., S<sub>sub1</sub> and S<sub>sub2</sub>, therefore, the HPF are equated as adaptive filters) for filtering said satellite signals with adaptive filters, thereby generating filtered versions (see Fig. 2; Filtered versions of the signals are S<sub>sub1</sub>' and S<sub>sub2</sub>') of said satellite signals,

updating means (Fig. 9, elements 55-60; Page 9, Paragraph 0158-Page 10, Paragraph 0169. The filtered coefficient calculating unit is equated as a means of updating the coefficients via calculation. The calculating unit operates based on error value. Therefore, errors are minimized each time a calculation process is performed) for updating the coefficients of said adaptive filters by minimizing the mismatch between the actual, i.e., (Fig. 8;  $-3T$ , 0 is equated as actual run), and the expected run (Fig. 8;  $-2.6, T$  is equated as expected run) length between two transitions (Fig. 8; Transitions at  $-3T$ , 0) of the main signal (Fig. 2; see signal  $S_{\text{main}}$ ), and

processing means (Fig. 2, element 6 discloses a processing unit which processes the main signal, i.e.,  $S_{\text{main}}$ , thereby, generating an improved main signal, i.e.,  $S_{\text{dd}}$  in Fig. 3) for generating an improved main signal from said main signal by subtraction of said filtered versions of the satellite signals, i.e.,  $S_{\text{db}_1}$  and  $S_{\text{db}_2}$ , (Page 11, Paragraph 0197; Fig. 11, element 76 is a subtracter).

Claim 4, A signal processor (Fig. 2, element 6) as claimed in claim 3, comprising a fixed clock (Page 7, Paragraph 0117. A reference clock is equated as a fixed clock), time recovery means (Page 7, Paragraphs 0123-0127; Fig. 6, elements 31 and 32 comprises time recovery means since the synchronization detecting unit detects timing and the determining unit determines if the sync signal is repeated in the number of times set in advance. Therefore, by detecting and determining, timing is recovered), and a bit clock (Page 6, Paragraphs 0099-0102; Fig. 3, element 21; It is obvious to one of ordinary skill in the art to recognize that the digitized signals, i.e.,  $S_{\text{db}_2}$  and  $S_{\text{dd}}$  inputted



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into element 21 comprises of bits which generates synchronization timing signal. Therefore, the synchronization timing signals are equated as bit clock signals) driven by said time recovery means (Fig. 6, elements 31 and 32 comprises time recovery means),

said fixed clock being asynchronous with respect to said bit clock (Page 12, Paragraphs 0214-0215 discloses reference clock having reference clock units and Page 6, Paragraphs 0099-0102 discloses synchronization timing generated by digital signals which comprises bits. Therefore, the reference clock unit, i.e. fixed clock is asynchronous with respect to the synchronization timing/clock ),

wherein said cross-talk cancellation means are operated at said fixed clock (Page 7, Paragraphs 0112 and 0129-0131).

Claim 6, An apparatus (Fig. 2, element S; Page 4, Paragraph 0073) for reading a signal stored along a track, i.e., track ST2, MT, and ST1, on a storage medium, i.e., DK, comprising a signal processor (Fig. 2, element 6) as claimed in claim 3.

Claim 7, An apparatus (Fig. 2, element S; Page 4, Paragraph 0073) for reading a signal stored along a track, i.e., track ST2, MT, and ST1, on a storage medium, i.e., DK, comprising a signal processor (Fig. 2, element 6) as claimed in claim 4.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyanabe et al (US 2002/0034268 A1) in view of Horigome et al (Patent No. 5729514).

Claim 5, Miyanabe discloses a signal processor (Fig. 2, element 6) as claimed in claim 4,

said signal processor further comprising time recovery means (Page 7, Paragraphs 0123-0127; Fig. 6, elements 31 and 32 comprises time recovery means since the synchronization detecting unit detects timing and the determining unit determines if the sync signal is repeated in the number of times set in advance. Therefore, by detecting and determining, timing is recovered)

said updating means (Fig. 9, elements 55-60; Page 9, Paragraph 0158-Page 10, Paragraph 0169. The filtered coefficient calculating unit is equated as a means of updating the coefficients via calculation. The calculating unit operates based on error value. Therefore, errors are minimized each time a calculation process is performed)

Miyanabe does not disclose, wherein said bit clock has a bit clock frequency and said fixed clock has a fixed clock frequency that is substantially different from said bit

clock frequency such that the ratio between said bit clock frequency and said fixed clock frequency is substantially different from 1.

Horigome discloses frequency characteristic circuit (Fig. 4, elements 21 and 22; Col. 5, lines 7-67).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Miyanabe with the teachings of Horigome, by integrating Horigome's frequency characteristic circuits into Miyanabe's Fig. 3, element 6, in order to generate a bit clock, i.e., synchronous timing, frequency and fixed clock frequency, i.e., reference clock frequency, that is substantially different such that their ratios are substantially different from 1; and for estimating and providing said ratio to said updating means where the updating means is designed to take said ratio into account for updating said coefficients, so, to correct an offset resulting from a mounting error of the skew sensor, as well as, to offset crosstalk by taking advantage of no correlation between the adjacent tracks arranged to derive a coefficient of correlation of sample information of a signal read from the central track with signal read from the adjacent tracks to target track and a cancel coefficient to reduce the coefficient of correlation to a minimum (Horigome; Col. 1, line 47-Col. 2, line 18).

Claim 8, Miyanabe in view of Horigome further discloses an apparatus (Fig. 2, element S; Page 4, Paragraph 0073) for reading a signal stored along a track, i.e., track ST2, MT, and ST1, on a storage medium, i.e., DK, comprising a signal processor (Fig. 2, element 6) as claimed in claim 5.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chibuike K. Nwakamma whose telephone number is 571-270-3458. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hai Tran can be reached on 571-272-7305. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

12/12/2007  
Chibuike Nwakamma

/Hai Tran/

Supervisory Patent Examiner, Art Unit 4178